

D&D Subgroup Highlights
November 10, 1998

This meeting was held in the EESB Cayuse Room starting at 9:00am.

Robotics Technology Integration Presentation

Kwan Kwok, from Sandia National Laboratory (SNL) and Robbin Duncan presented information on the new DOE complex-wide initiative being led by SNL. Kwan has been meeting with many individuals at DOE-HQ including Gerald Boyd, Ernie Moniz, and Jim Owendoff. All were supportive of this effort to provide an integrated approach to using robotics to address DOE needs across the Complex. A Complex-wide integrated team has been assembled that is led by FASTER Services of BWHC and SNL. FASTER is to provide the site project and facility integration experience, which SNL are the experts in robotics and remote systems operation. The idea is to work with individual projects at each site to integrate robotics into each project where it will make sense. This has begun at Rocky Flats (RFS) Building 771 and 776 for glovebox clean out. At Hanford the team will work on the Building 324 and 327 hot cells. A value engineering study will be issued soon dealing with the use of robotics. Other sites that are examining the use of robotics include the Nevada Test Site (NTS) for looking at waste containers and encapsulated glove boxes and LANL for making the laser cutter portable and remote handled. Some of the benefits from this initiative include a reduction in worker exposure, a reduction in project costs and schedules, a reduction in auxiliary secondary wastes, and development of re-usable designs and systems.

Kwan Kwok then presented information about Sandia's Intelligent Systems and Robotics Center. The center started in 1996 and was up and running in 1997. The center has \$30 million worth of equipment in buildings estimated to be worth \$23 million. The need for the center is to have more user driven programs. Kwan reviewed a few of the projects underway at the center. Most of these start with using modeling software and simulation tools including CAD/CAM. An example is the Weigh and Leak Check System (WALS) which is an automated workcell for handling hazardous material. This automated system which uses robotics was integrated into the operation at Pantex in 1997 to unpack and pack pits in containers. Another innovative device developed by the center is the Radiological Environment Modeling System (REMS) which is an ergoman model with 47 modeling points. REMS has been used to analyze new nuclear material process lines. The center is now working on modeling a glove box processing line that would be similar to what will be needed at RFS and the Hanford 324 Building. This work involves using the REMS and CAD programs to develop an optimal line configuration before setting one up onsite.

The Robotics Cross-Cutting Focus Area is working with the integration team as part of this initiative. This effort cuts across all parts of DOE including EM and

DP. The team works with industry after the modeling work is finished to implement and deploy the new systems. The SNL licensing office works with industry to transfer any new technology and techniques arising from this research.

BNFL Presentation

Kim Kogler introduced Ron Kapaun and Adrian McClelland from BNFL Instruments. There are two parts of BNFL of which BNFL, Inc. is the one working on the high level waste vitrification and the other is BNFL Instruments which they work for. The presentation focussed on the capabilities and equipment that BNFL has developed to aid in D&D. BNFL Instruments was spun off from BNFL, Inc. three years ago and they have also acquired other companies since then. Ron presented an overview of how the instruments that BNFL sells fit into decommissioning work. The first piece of equipment Ron discussed was the RadScan 700 which is designed to identify, locate, map and characterize gamma radiation hot spots. RadScan 700 is a 2D imaging system, a directional quantitative count rate meter and a low-resolution gamma-ray spectroscope. It can be used in a wide range of applications and environments including remote locations. The RadScan detector head is fitted with a laser range finder and a video camera that is radiation hardened. The RadScan system is to be used in U-Plant after the initial screening is done. It gives detailed isotopic distributions accurately and remotely. It can measure more than one source in the area and the rate of scan is programmable to allow better resolution.

The LARCH system is for surveying large areas in situ for radionuclides. The LARCH system uses high-resolution gamma spectrometry, a global positioning system, and laser ranging technology to produce electronic site maps that show the concentrations of each gamma-emitting isotope. The LARCH system can be deployed on a vehicle, a trolley, or in a pole mounted configuration.

Ron then discussed the Decommissioning In Situ Plutonium Inventory Monitor (DISPIM) system that assays residual Pu in glove boxes and process vessels. DISPIM uses gamma spectrometry to locate and quantify concentrations of Pu while external to the glove box. It will locate Pu hot spots and their locations in the glove box. This system has been used at Rocky Flats for in situ measurements of glove boxes and will be deployed at the 771 building there.

BNFL Instruments has a series of TRU packet monitors both plant-integrated and mobile systems. Ron reviewed how the TRU monitors worked and how they keep track of how much radioactive material is in each container. The TRU monitor uses neutron counting as well as gamma spectrometry to assay the waste packets. The TRU packet monitors have been used to assay TRU waste arising from everyday plant operations, hot spots identified by RadScan or DISPIM, or dismantling and size-reduction processes during D&D operations. In addition to the packet monitors BNFL Instruments has a complete line of assay

systems for drums, canisters, boxes and other containers to be used in the certification process. Some of these have been installed at the Hanford WRAP facility. Pictures and photographs of all the equipment presented were shown in various applications.

The final piece of equipment discussed was the Ionsens system to measure the amount of radioactivity in pipes or other large items. This was developed at LANL to monitor pipe internals and has been used in England for free release of piping. Ionsens uses air that is passed over a parallel plate ion detector to measure the presence of radioactivity without penetrating the pipe or large item, such as I-beams.

EM Integration Pilot Projects

Jim Goodenough and Shannon Saget talked about this DOE-HQ effort to create projects that integrate the various programs of DOE and cut across the sites. They will be looking for candidate projects to fund soon. CDI could be one of these. Jim is going to SRS to talk about this integration effort and will offer up CDI as a pilot project. Shannon stated that there is a science and technology integration team that will provide support to the other teams. The Robotics Technology Integration effort was presented earlier in the meeting and is an example of one of these teams. There is also an Integrated Executive Committee with Jim Owendoff as the chair and the field managers of the largest five DOE sites as members. This committee will meet on November 19 to decide on which pilot projects to pursue. One such project that may be picked could be the robotics hot cell work that we submitted for ASTD funding.

Miscellaneous Updates

Greg Berlin stated that the S&T needs identification process for this FY would be started earlier this year. A letter from DOE-RL with a complete schedule will be out soon. The FY2000 needs will be due to DOE-HQ on September 1 this year.

The D&D subgroup FY98 Annual Report was completed and incorporated all members comments. It will be distributed at the STCG Management Council (MC) meeting in November 1998. The D&D Subgroup FY99 Work Plan will be presented at the December Management Council meeting. Greg Berlin is putting this together and incorporating the subgroup member's comments. Jim Goodenough and Dave Langstaff will present the work plan at the December MC meeting. The C-Reactor presentation that Shannon Saget gave at SPECTRUM will be on the November MC agenda. Future agenda items for the MC meetings will include CDI and the Robotics Technology Integration Effort. The Pu Focus Area has completed an MYPP that includes a disposition map for Pu at DOE including Hanford. The next subgroup meeting will be December 8th at 9am in a room to be announced.

D&D Subgroup Meeting Attendees

Gary Ballew	PREC	946-0611
Greg Berlin	FDH	372-4352
Bill Bonner	PNNL	372-6263
Ron Borisch	BWHC	372-3382
Dennis Brown	DOE-RL/STP	372-4030
Robbin Duncan	B&W Hanford/FASTER	373-2229
Don Engelman	NHC/FDH-TM	372-6536
Sue Garrett	PNNL	372-4266
Jim Goodenough	DOE-RL/AME	376-0893
Bob Julian	Ecology	736-5702
Ron Kapaun	BNFL Inst. Ltd.	(727) 791-7259
Kim Koegler	BHI	372-9294
Charlie Kronvall	BWHC	376-0893
Kwan Kwok	SNL	(505) 845-7170
David Langstaff	DOE-RL/AMF	376-5580
Adrian McClelland	BNFL Inst. Ltd.	(+44) 19467 85253
Rand Miller	PAI for DOE-RL	372-1328
Paul Pak	DOE-RL/AME	376-4798
Shannon Saget	DOE-RL/STP	372-4029
Nancy Uziemblo	Ecology	736-3014
Steve Weakley	PNNL	372-4275